

**ABSTRACT**

A single chip integrated circuit measuring circuit (1) for determining a characteristic of the impedance of an external complex impedance circuit (2) for facilitating

5 characterization of the impedance of the complex impedance circuit (2) comprises a signal generating circuit (7) for generating a variable frequency stimulus signal for applying to the complex impedance circuit (2). A first receiving circuit (10) receives a response signal from the complex impedance circuit (2) in response to the stimulus signal and conditions the response signal. A first analog-to-digital converter (68) converts the conditioned response

10 signal to a first digital output signal, which is read from the first analog-to-digital converter (68) through a first digital output port (14). The response signal from the complex impedance circuit (2) is a current signal, and a current to voltage converter circuit (64) converts the response signal to a voltage signal. A first RMS to DC level converting circuit (70) converts the AC voltage of the response signal to a DC voltage level, and a fourth multiplexer (67)

15 selectively applies the voltage response signal or the DC voltage level signal to the first analog-to-digital converter (68), depending on whether it is desired that the first digital output signal should be indicative of the phase shift or amplitude change in the response signal relative to the stimulus signal. A second receiving circuit (20) receives the stimulus signal, and similarly converts the stimulus signal to a second digital output signal for facilitating

20 comparison of the response signal with the stimulus signal.